



Preliminary Environmental Site Investigation at Stonehenge Road, Wanaka

Prepared for: Northlake Investments
Limited c/- David Osborne

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1 Introduction and Scope of Report

David Osborne of Northlake Investments Limited (NIL), requested that JKCM Ltd, trading as Insight Engineering (IE), undertake a preliminary environmental site investigation (PSI) at Lot 2000 DP 613751, Stonehenge Road, Wanaka (herein referred to as “the site”) as outlined in our Short Form Agreement (reference P26001, fully executed on 13 January 2026).

Figure 1 (Appendix 1) indicates the location of the site. We understand that this report will form part of a Private Plan Change application to rezone part of the site for residential use (noting that it already forms part of the Northlake Special Zone (Activity Area C1 and E1), which is an Urban Zone under the Operative District Plan).

The purpose of this investigation was to assess the suitability of the site for residential subdivision, development and use, from the perspective of the Resource Management (*National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health*) Regulations¹ (herein referred to as the NES). This investigation was undertaken in general accordance with the Ministry for the Environment (MfE) *Contaminated Land Management Guidelines No. 1: Reporting on Contaminated Sites in New Zealand*².

2 Objectives of the Investigation

The objective was to determine if potentially contaminating historical activities pose an unacceptable risk to human health during and post site development.

2.1 Approach

IE completed the following scope of work to satisfy the investigation objectives:

2.1.1 Review of Site Information

Several sources were contacted for information relating to the sites past and present uses and to identify any other environmental issues which may be on record. This consisted of:

- Undertaking a site walkover to describe current site conditions and assess whether any visual or olfactory evidence of contamination is present at the site;
- Interviewing the property owner, to obtain information relating to potentially contaminating activities that have been undertaken at the site;
- Review of publicly available data describing the local geology and hydrogeology;
- Review of the Otago Regional Council Hazardous Activities, Industries and Bore Search database in terms of any property specific records of hazardous activities or industries that are held in their database of potentially contaminated sites;
- Reviewing the Queenstown Lakes District Council online property files to determine whether any records of contamination, or potentially contaminating activities, at the site are held in their database; and
- Reviewing publicly available historical aerial photographs and maps of the site and surrounding area;

3 Site Description

Site information is summarised in Table 1.

Table 1: Site Information

Location	Stonehenge Road, Wanaka
Legal Description	Lot 2000 DP 613751
Property Ownership	Northlake Investments Limited
Current Site Use	Not used
Proposed Site Use	Residential
Property / Site Area	Approximately 206,100 m ² (20.61ha)
Territorial Authorities	Queenstown Lakes District Council (QLDC) Otago Regional Council (ORC)
Zoning	Northlake Special Zone – Activity Areas C1 and E1 (Operative District Plan)

The site setting is summarised in Table 2.

Table 2: Site Setting

Topography	The topography varies significantly with flat areas, minor, moderate and steep slopes throughout the site. The elevations range between approximately 415 m above mean sea level (amsl) and 330 m amsl.
Local Setting	The site is located approximately 2.6 km to the north-east of Wanaka town centre. The site is surrounded by residential properties towards the south, south east and east as well as recreation land towards the north and west.
Nearest Surface Water & Use	The Clutha River/Mata-Au, used for recreational purposes and as a source of water for hydro-power generation as well as private irrigation schemes, is located approximately 435 m to the north of the site.
Geology	The GNS New Zealand Geology Webmap ³ indicates that the site is located within the “Late Pleistocene (Quaternary) glacier deposits” geological unit of the Albert Town Advance described as ‘ <i>Unsorted bouldery clay-rich gravel (till) with minor banded silt and sand lenses</i> ’. The surface material observed over the majority of the site during the walkover is broadly described as light brown silt with gravel and organics.
Hydrogeology	According to a report completed by ORC ⁴ , the site is located within the unconfined Wanaka-Cardrona Aquifer. Groundwater is considered likely to flow generally towards the Clutha River / Mata Au, north / north east of the site.
Groundwater Abstractions ⁵	There are no groundwater abstraction consents issued for properties located at, or within 250 m of the site.

Table 2: Site Setting

Discharge Consents ⁵	Three discharge consents issued for properties located at, or within 250 m of the site:
	Consent number RM23.051.02, located in the northern portion of the site, was issued to Northlake Investments Limited to discharge sediment-laden water to land in a manner that it may enter water for the purpose of a residential development. The Consent expires on 31 December 2027.
	Consent number RM24.406.02, located in the western portion of the site, was issued to Northlake Investments Limited to discharge sediment-laden water to land for the purpose of residential development. The Consent expires on 28 August 2029.
	Consent number RM22.335.02, located just beyond the eastern site boundary, was issued to Winton Property Limited to sediment laden water to land in a manner that it may enter water for the purpose of a residential development. The Consent expires on 31 December 2027.

3.1 Current Site Conditions

Claude Midgley of IE completed a site walkover inspection on 18 January 2026. Observations made at that time are summarised in Table 3 and photographs are presented in Appendix 2.

Table 3: Current Site Conditions

Site description	The site is generally vegetated with turf or native bush, but a few pine trees were also observed. Earthworks were in progress to construct access tracks in the south western portion of the site.
Visible signs of contamination	A small hydrocarbon stain was observed at the site surface on one of the new tracks being installed in the south western portion of the site.
Surface water appearance	No surface water was present during our walkover inspection.
Current surrounding land use	Residential land is located towards the south, south east and east. Recreation land is located towards the north and west.
Local sensitive environments	The Clutha River / <i>Mata Au</i> and the surrounding riparian zone, located north of the site, are considered sensitive environments.
Visible signs of plant stress	No visible signs of plant stress were noted within the site boundaries.

3.2 Interview with Site Owner

David Osborne (*pers. comm.*) provided the following information:

- NIL purchased the site from Real Estate Southern Holdings Limited (RESHL) in 2012;
- Mr Osborne advised that RESHL had owned the site since the 29th of June 2010, and it is his understanding that the land was historically used for sheep farming;
- Mr Osborne confirmed that rabbit control has been undertaken informally with two poison bait drops (carrots with Pindone) during the time that NIL has owned the site;

- Mr Osborne indicated that a significant proportion of the site contains uncertified fill (topsoil), which was placed on the site during the development of the neighbouring residential areas, towards the south east, which required the topsoil to be stripped and placed elsewhere. Mr Osborne also indicated that some concrete, hardfill (aggregate) and tree stumps were included in the uncertified fill. A plan showing the locations of the uncertified fill is provided in Appendix 3;
- Mr Osborne is not aware of any potential sources of contamination within the site boundaries.

3.3 ORC Property Database

IE reviewed the ORC Hazardous Activities, Industries and Bore Search database⁶ on 16 January 2026. The search confirmed that site is not currently on the ORC database.

The nearest site recorded on the database (HAIL.01150.01) is located approximately 650 m north west of the site. The area is recorded as being a verified “Non-HAIL” site, which indicates that hazardous activities and industries list⁷ (HAIL) activities have not occurred in that area. Notes associated with that site, recorded in 2015 / 2016, state “*No specific HAIL uses identified. Sampling indicative of background concentrations, except 1 sample.*”

3.4 QLDC Property File

The property file⁸ contained documents relating to the installation of a bulk water tank and infrastructure associated with the tank (MN250530, RM250530, EX1491 and EX1548). No records of potential contamination were contained in those records.

The property file also contained a Boundary Adjustment application (RM250979). An Assessment of Environmental Effects (AEE), prepared by Patersons, was contained in the property file.

The AEE mentions that Patersons reviewed historic (sic) aerial photographs on Retrolens and Google Earth, property and Resource Consent information on QLDC’s eDocs system and searched the ORC contaminated land database. No records of potentially contaminating activities were found in those sources by Patersons.

No known preliminary or detailed site investigations could be found on the property file.

3.5 Review of Historical Maps and Aerial Photographs

Photographs in the Crown Collection⁹ and Google Earth¹⁰, as well as topomaps on the MapsPast¹¹ website, have been reviewed to obtain information on the past uses of the site. Aerial photographs taken between 1956 and 2024, as well as maps created between 1939 and 2019, have been reviewed. Table 4 summarises the features visible in each image.

Table 4: Historical Maps and Aerial Photographs

1939 ¹¹	The site is part of two large properties. The majority of the site is part of a property that extends towards the north and south, labelled with ‘6’ and ‘181, 2, 18’. The eastern corner of the site is part of a property that extends further north, east and south, labelled with ‘9’ and ‘259,2,24’. The location of Outlet Road is marked with two parallel black lines with short curving lines extending from them. The Clutha River / <i>Mata Au</i> is marked in blue in the area north of the site. No other significant features are visible on the map.
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Table 4 (cont.): Historical Maps and Aerial Photographs

1949 ¹¹	The label for the property that contains the majority of the site now states '6' and '181,1,38' and the property that contains the eastern portion of the site now has a label that states '9' and '260,0,12'. No other significant changes are visible, compared with the 1939 map.
1956 ⁹	The site and surrounding area appears to be undeveloped and vegetated with turf as well as pockets of shrubs. Outlet Road is visible as an unsealed track in the area north east, east and south east of the site. No other significant features are visible at the site, or in the surrounding land.
1958 ⁹	With the exception of a rectangular block of trees being established on a property south east of the site, no significant changes are visible compared with the 1956 photograph.
1966 ⁹	The site remains unchanged. In the surrounding land, a line of trees now extends from the eastern side of the original block of trees visible in the 1958 photograph towards the north east. That line of trees turns further north east in the area near to Outlet Road and extends to the area near the Clutha River / <i>Mata Au</i> . No other significant changes are visible, compared with the 1958 photograph.
1969 ¹¹	With the exception of a blue line, indicating a watercourse in the north eastern portion of the site, no significant features are visible at the site. In the surrounding area, Outlet road is marked with two parallel dashed lines and alternating orange and clear blocks inside the roadway. Trees are marked in the area south east of the site. A black square indicates the presence of a building in the area north of the site. No other significant features are visible at the site or in the surrounding area, compared with the 1949 map.
1974 ⁹	Apart from the growth of some shrubs and trees at the site and surrounding area, there are no significant changes compared with the 1966 photograph.
1979 ¹¹	Apart from a new label that states 'Motor Camp' and three additional black squares in the area north of the site, as well as the road north and east of the site being labelled 'Beacon Point Road', there are no significant changes compared with the 1969 map.
1982 ⁹	No significant changes are apparent at the site or in the surrounding area, compared with the 1974 photograph.
1983 ⁹	No significant changes are apparent at the site or in the surrounding area, compared with the 1982 photograph.
1984 ⁹	Apart from a lighter-coloured area of turf, suggesting that hay was harvested, in the area between the line of trees and the south eastern portion of the site, no significant changes are apparent at the site or in the surrounding area.
1989 ¹¹	No significant changes are visible, compared with the 1979 map.
1999 ¹¹	No significant changes are visible compared with the 1989 map.
2003 ⁹	The site remains mostly unchanged, with a new block of trees visible in the eastern portion of the site and a new informal track leading through the northern portion of the site, from Outlet Road to the area north of the north western portion of the site. No other significant changes are apparent at the site or in the surrounding area.
2005 ¹⁰	No significant changes are visible at the site or in the surrounding area, compared with the 2003 photograph.

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Table 4 (cont.): Historical Maps and Aerial Photographs

2009 ¹¹	The area north of the site is no longer labelled 'Motor Camp' and Beacon Point Road no longer extends to that area. Instead, the road has been renamed Outlet Road and a dashed black line connects the end of Outlet Road to the northern end of what was Beacon Point in the area north west of the site. No other significant changes are apparent, compared with the 1999 map.
2011 ¹⁰	No significant changes are visible at the site or in the surrounding area.
2012 to 2015 ¹⁰	No significant changes occur at the site or in the surrounding land during this timeframe.
2016 ¹⁰	A new track crosses the western portion of the site along a north west / south east axis. The track leads from an area with significant soil disturbance, for the purpose of residential subdivision, to a stockpiling location just beyond the north western site boundary. Soil stockpiles cover an area of approximately 3,250 m ² at that location. Some trees have been removed from the original rectangular block of trees in the area south of the site.
2017 ¹⁰	Placement of imported fill across an area of approximately 9,300 m ² is visible in the north western portion of the site. A few more stockpiles are visible in the area directly north of the north western portion of the site, which now covers an area of approximately 4,800 m ² . Additional earthworks and stockpiles associated with residential subdivision are visible in the area south east of the site. Later in 2017, the remaining trees from the original rectangular block of trees, south of the site, have been removed. No other significant changes are apparent at the site or in the surrounding land.
2018 ¹⁰	Water races have been cut into the slopes of the south western portion of the site. In the surrounding land, additional significant earthworks and fill placement, for residential subdivision purposes, are visible in the area directly south and east of the site. The remaining trees have been removed from the area south east of the site. No other significant changes are apparent at the site or in the surrounding land.
2019 ¹⁰	Additional fill placement is visible in the north western portion of the site. The block of trees has been removed from the eastern portion of the site. Bulk subdivision earthworks continue to cover larger areas in the land south of the site. No other significant changes are apparent at the site or in the surrounding land.
2019 ¹¹	No significant changes are apparent, compared with the 2009 map.
2021 ¹⁰	A new track has been constructed in the north eastern portion of the site. The track enters the site from the north eastern corner and extends westward before turning south and connecting with the original track that crosses through the western portion of the site. Additional fill placement is visible in the north western portion of the site. Subdivision earthworks have commenced in the area south of the western corner of the site and continue in the area south of the site. No other significant changes are apparent at the site or in the surrounding land.
2022 ¹⁰	The tracks on site appear to have been covered with hardfill. Additional filling is visible in the north western portion of the site. A circular object resembling a water tank is visible on a cleared area in the north western portion of the site. A track leads south from that location. No other significant changes are visible at the site or in the surrounding area.

Table 4 (cont.): Historical Maps and Aerial Photographs

2024 ¹⁰	Additional stockpiles are visible in the north western portion of the site, as well as in the area directly north of the north western corner of the site. Four small circular objects resembling water tanks are visible in the area south west of the large water tank in the north western portion of the site. The track leading through the north eastern portion of the site has been converted into a stormwater channel lined with river cobbles. In the surrounding land, bulk subdivision earthworks have been completed in the area south and east of the site and new dwellings are visible in those areas. No other significant changes are visible at the site or in the surrounding area.
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3.6 Summary of Identified Hazardous Activities and Industries

Two activities noted on the MfE Hazardous Activities and Industries List⁷ (HAIL) have been identified during review of the site history:

Category A11 - Pest control including the premises of commercial pest control operators or any authorities that carry out pest control where bulk storage or preparation of pesticide occurs, including preparation of poisoned baits or filling or washing of tanks for pesticide application.

- This category is represented by the infrequent (two occasions) use of Pindone-laced carrots for rabbit control. The risks to human health from this activity are considered to be very low.

Category G5 – Waste disposal to land (excluding where biosolids have been used as soil conditioners).

- This category is represented by the placement of uncertified fill at the site. Given the source location of the material, the risks to human health are considered to be very low.

According to Regulation 5 of the NES¹, the Regulations apply if a HAIL activity has been undertaken, or is likely to have been undertaken, on a property.

4 Conceptual Site Model

A contamination conceptual site model, presented in Table 5, consists of three primary components to allow the potential for risk to be determined. These are:

- Source of contamination;
- Pathway to allow the contamination to mobilise; and
- Sensitive receptors which may be impacted by the contamination.

Table 5: Conceptual Site Model

Source	Pathway	Receptor
Naturally occurring heavy metals. Respirable silica.	Inhalation of dust; Dermal absorption (direct contact); Ingestion of soil and / or produce grown in the soil.	Maintenance / Excavation workers; Site construction workers; Visitors; Future residents.
Acceptable risk to human health?	Subdivision and development of the site for residential use Yes: No sources of contamination have been identified, therefore the risks to human health are considered likely to be acceptable.	

5 Conclusions

Information obtained as part of this investigation (refer to Section 3) indicates that the site has been used as pastoral grazing for sheep prior to the development of the neighbouring area towards the south east for residential purposes. At that time, topsoil stripped from the new residential areas was placed onto the site. The fill material reportedly includes concrete, hardfill and tree stumps.

The site owner also confirmed that Pindone has been used to poison rabbits on two occasions since 2012. Evidence was therefore found that two HAIL activities have occurred at the site (pest control and waste disposal to land).

The risks to human health, resulting from the two HAIL activities, are considered to be very low because the use of Pindone, which is recommended by ORC, on at least two occasions since 2012 is unlikely to result in significant contamination impacts. Furthermore, topsoil originating from the neighbouring residential subdivision towards the south east is not considered likely to contain significant contamination impacts as no sources of contaminants were present in that area.

It is therefore considered highly unlikely that there will be a risk to human health if the activities of changing the land use to residential and subdividing the land for residential development are done to the piece of land.

6 Recommendations

It is recommended that the Plan Change application be approved and that subdivision of the site for residential purposes be allowed as that activity is Permitted according to Regulation 8(4) of the NES¹.

It is further recommended that any future disturbance of soil will require QLDC Consent for a Discretionary Activity, pursuant to Regulation 11, because the volume of earthworks are considered likely to exceed the Permitted Activity criteria provided in Regulation 8(3)¹.

If any material that shows signs of potential contamination (visual or olfactory indicators such as chemical odours or abnormal stains) is unearthed in the future, work should stop immediately and a suitably qualified environmental practitioner should be engaged to assess the risk to human health prior to recommencing earthworks.

7 References

1. Ministry for the Environment 2012: Users' Guide National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health
2. Ministry for the Environment 2021: Contaminated Land Management Guidelines No.1: Reporting on Contaminated Sites in New Zealand
3. GNS Webmap Institute of Geological and Nuclear Sciences 2013: 1:250,000 Geology. Viewed at: <http://data.gns.cri.nz/geology/>
4. Otago Regional Council 2011: Integrated Water Resource Management for the Cardrona River.
5. Otago Regional Council 2026: Otago Regional Council Resource Consent Database. Viewed at: <http://data.orc.govt.nz/>
6. Otago Regional Council 2026: Mapping Resource Hazardous Activities, Industries and Bores Search. Viewed at: <https://maps.orc.govt.nz/portal/apps/MapSeries/index.html?appid=052ba04547d74dc4bf070e8d97fd6819>
7. Ministry for the Environment 2011: Ministry for the Environment Hazardous Activities and Industries List
8. Queenstown Lakes District Council 2026: eDocs Portal. Viewed at: <http://edocs.qldc.govt.nz/>
9. Local Government Geospatial Alliance 2026: Retrolens - Historical Image Resource Project. Viewed at: <http://retrolens.nz>
10. Google Earth v7.3.6.10441. Wanaka, Central Otago, New Zealand. -44.668895° lon, 169.148595° lat, Eye alt 1.58 km. <http://www.earth.google.com>. [January 2026]
11. Mapspast 2026: Current and Historical Topographic Maps (Topomaps) of New Zealand. Viewed at: <http://www.mapspast.org.nz/>

8 Limitations

- i. We have prepared this report in accordance with the brief as provided. This report has been prepared for the use of our client, Northlake Investments Limited, their professional advisers and the relevant Territorial Authorities in relation to the specified project brief described in this report. No liability is accepted for the use of any part of the report for any other purpose or by any other person or entity.
- ii. The recommendations in this report are based on the ground conditions indicated from published sources, site assessments and subsurface investigations described in this report based on accepted normal methods of site investigations. Only a limited amount of information has been collected to meet the specific financial and technical requirements of the client's brief and this report does not purport to completely describe all the site characteristics and properties. The nature and continuity of the ground between test locations has been inferred using experience and judgement and it should be appreciated that actual conditions could vary from the assumed model.
- iii. Subsurface conditions relevant to construction works should be assessed by contractors who can make their own interpretation of the factual data provided. They should perform any additional tests as necessary for their own purposes.
- iv. This Limitation should be read in conjunction with the IPENZ/ACENZ Standard Terms of Engagement.

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We trust that this information meets your current requirements. Please do not hesitate to contact the undersigned on 021 556 549 if you require any further information. The author is a Certified Environmental Practitioner (CEnvP) under the Environment Institute of Australia and New Zealand (EIANZ) accreditation system.

Report prepared by



Claude Midgley
CEnvP, MSc.
Principal Environmental Scientist



Appendix 1

Figures



Description	Site Location	Figure Number	1	
Project	Preliminary Site Investigation Stonehenge Road, Wānaka	Date	Jan-26	
Client	Northlake Investments Limited c/- David Osborne	Drawn by	CM	
Project Number	26001	Approved by	JK	

Appendix 2

Site Photographs



Photo 1: Northern portion of the site, viewed from the north facing south west.



Photo 2: Western-central portion of the site, viewed from the north west facing south east.



Photo 3: South western portion of the site, showing a small fuel spill.



Photo 4: Southern portion of the site, viewed from the north west facing south east.



Photo 5: Southern portion of the site, viewed from the north west facing south east.



Photo 6: South western portion of the site, viewed from the south facing north west.

Description	Site Photographs	Photos	1 to 6
Project	Preliminary Site Investigation Stonehenge Road, Wanaka	Date Taken	18/01/26
Client	Northlake Investments Limited c/- David Osborne	Taken by	CM
Project Number	26001	Approved by	JK



Appendix 3

Uncertified Fill Locations

